Fiber and its effectiveness in dairy bovine nutrition.

Final Degree Project
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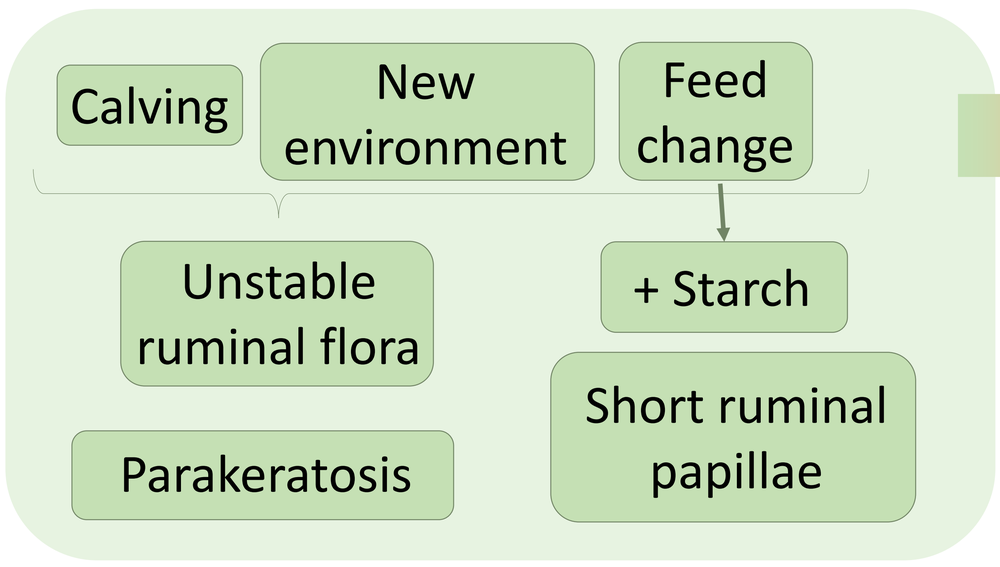
Objectives

This bibliographic review looks at fiber in lactating cows diet and its effectiveness to induce rumination and prevent subacute ruminal acidosis (SARA). The aim is to understand how the veterinarian practitioner may make nutritional recommendations to meet the dairy-cow's fiber requirements, and how the mechanism for determining the optimal level of fiber inclusion has improved over the last twenty years.



SUBACUTE RUMINAL ACIDOSIS

ruminal pH
- < 5,6 during > 3 h/d (Plaizier et al., 2008)
- < 5,8 during > 6 h/d (Zebeli et al., 2008)

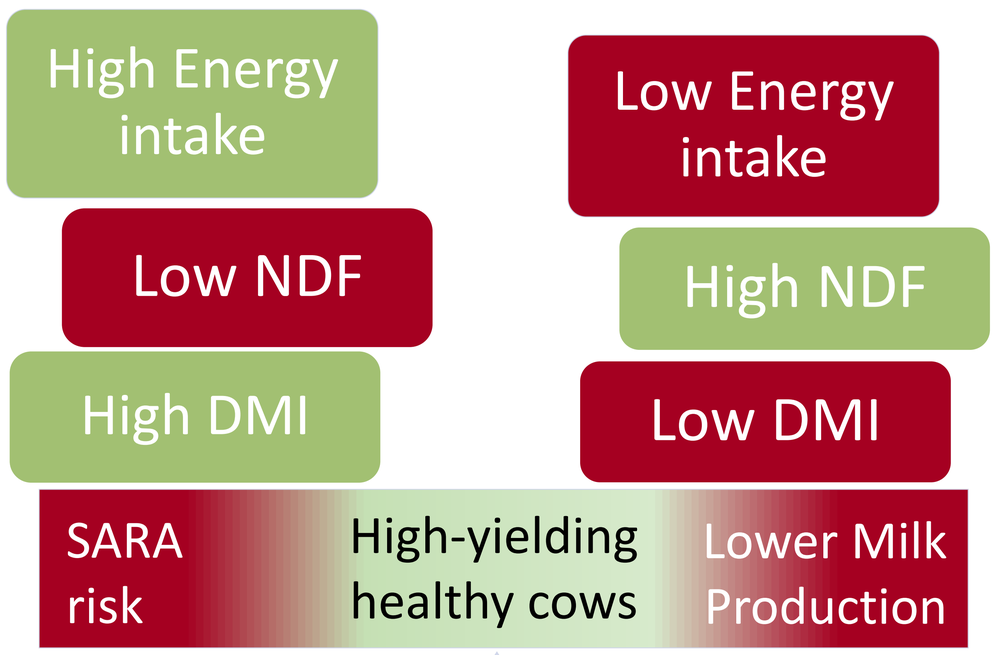
Bovine animals have an extensive stratification of the reticuloruminal content. The correct formation of the solid mid-strate stimulates ruminal motility, rumination, salivation and is crucial for particle retention and fiber digestibility.

The saliva intake induced by ruminating activity is crucial to mitigate the acidification caused by the fermenting ruminal content.

To keep the solid mid-strate active, and promote ruminal health, the size of the Total Mixed Ration (TMR) particles should be large enough. In other words, a proper amount of **physically effective fibre** is needed (Mertens, 1997).

The Penn State University has designed a practical tool to measure the proportion of different particle-size groups by sieving (Kononoff et al., 2003).

More recently, White et al. (2017) have developed the most accurate system to estimate the combination of dietary physical and chemical characteristics that would maintain targeted ruminal pH.



To have healthy, high-yielding and happy cows, *just shake it*.

Figure 1. Penn-State Particle Separator (Kononoff et al., 2003)

Conclusion

The Penn-State Particle Separator has become a great on-farm tool for the nutritionist to assess particle size in TMR, which makes it easy to determine whether the diet has the adequate proportion of forage particles large enough to ensure ruminal health.

References

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